TechAlliance

SUMMARY OF TECH'S IMPACT ON WASHINGTON'S ECONOMY

Technology is driving innovation across the state and throughout our top industries. The Tech Alliance wanted to better understand how this shift was affecting Washington's workforce, companies, and communities. In partnership with the economic impact firm, Community Attributes, we dug into the data and stories that underlie Washington's tech-driven economy. The digital report at technology-alliance.com is the result.
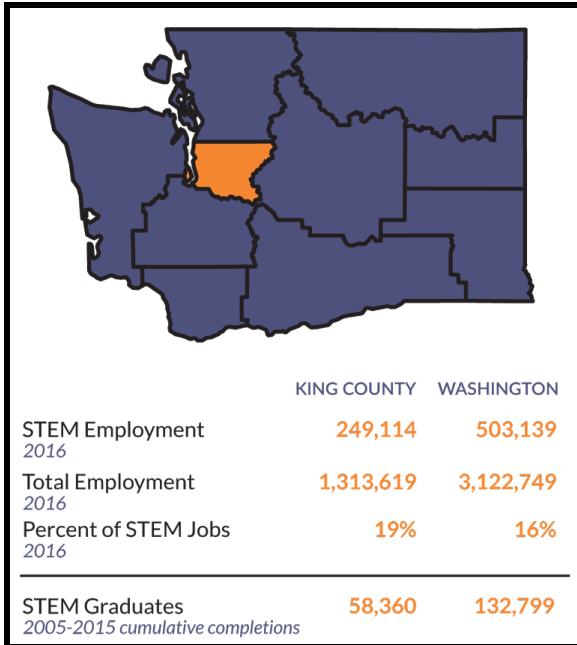
What we found was a diversified economy dependent on the development of new technologies, the adaptation and application of those technologies, and the required shifts in the workforce (new degrees, retraining, etc.). The strength of this economy depends on our collective commitment to supporting those elements that make this growth possible - education, the entrepreneurial and research climate, and distribution of and access to opportunities. This is where the Tech Alliance is focused.

Key Findings

1. **STEM is everywhere.** STEM-driven jobs are in every industry and every community, with minimal variance by region. Software developers, nurses and engineers dominate the STEM occupations in every region of the state, and are working in all industries, not just the ICT sector.
2. **Our institutions of higher education cannot keep pace with the demand**. We have huge gaps in our supply of STEM-trained workers - both in the current workforce and in the pipeline of STEM graduates.
3. **The forecast points to even greater STEM job growth and penetration.** Looking at the state's projections by occupation, we see a much faster rate of growth for STEM jobs over any other; this is dominated primarily by computing-based occupations.

8-20%
Range of STEM jobs as percent of total jobs across state's regions

13,783
Current annual gap between cumulative (10 year) STEM degrees & certificates and STEM job openings

~48%
STEM job growth due to growth in computing occupations
(5,388 of the 11,331 new STEM jobs each year 2020-25)

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STEM IN KING COUNTY

	KING COUNTY	WASHINGTON
STEM Employment *2016*	249,114	503,139
Total Employment *2016*	1,313,619	3,122,749
Percent of STEM Jobs *2016*	19%	16%
STEM Graduates *2005-2015 cumulative completions*	58,360	132,799

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TOP STEM OCCUPATIONS

	# STEM Jobs
Software Developers, Applications	47,227
Registered Nurses	20,874
Computer Systems Analysts	11,934
Software Developers, Systems Software	10,463
Computer Programmers	9,601

WA STATE UNIVERSITIES ARE NOT GRADUATING ENOUGH STEM GRADS TO MEET JOB DEMAND
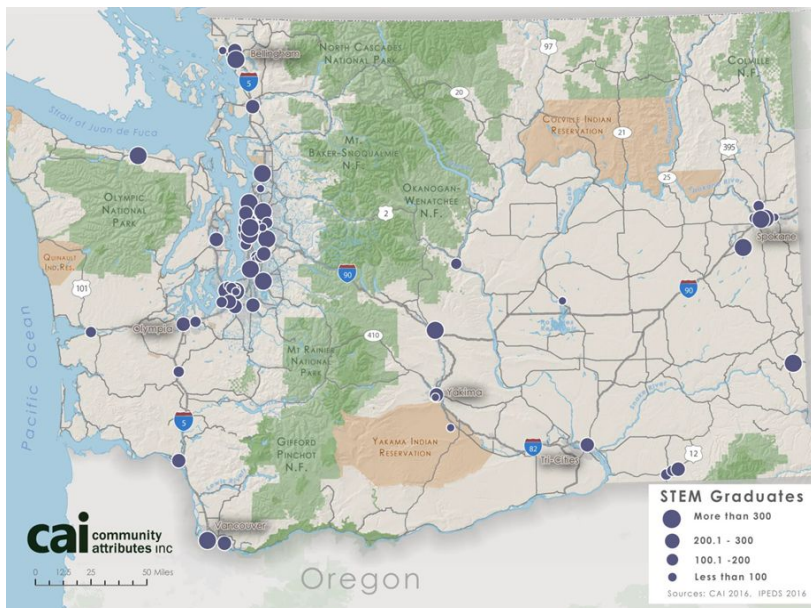
University of Washington-Seattle Campus had the largest number of STEM graduates in the state with **over 4,300 grads in 2016** (31% of their graduates)

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KING COUNTY STORIES THAT ILLUSTRATE THE DATA

MARITIME
When a shipping vessel breaks down in the Arctic Ocean, what happens? How do fleets monitor their cargo? In the maritime industry, most ships have sensors, which enables the port engineers to monitor the vessels and their cargo from the dock. While the sensors track the vessel and cargo,they don't provide insights into how to avoid certain risks or predict engine failure. Seattle-based **ioCurrents** is a **software start-up** doing just that. It has created a 'MarineInsight' platform that combines **machine learning with cloud-based analytics**, both of which provide commercial ships with real-time data. The platform has two components: an on-vessel monitoring device that collects data on the ship and a remote cloud platform that performs the analysis. The predictive data helps ship captains and engineers identify failures before they happen, better protect assets and crew, and optimize fuel use and maintenance. This technology, once integrated, not only benefits the individual fleets by shifting to proactive decision-making, it provides valuable insight on the industry's shipping routes – many of which are remote. There is little data that exists on remote routes, which leaves fleets highly vulnerable.

ADVANCED MANUFACTURING & MIXED REALITY
Virtual Reality (VR), Augmented Reality (AR), Mixed Reality (MR). All versions of tech-driven altered reality. What is the difference between them? VR displays objects that are not there, while AR is the ability to see real world objects (digitally enhanced) in your physical environment, yet it is a digitally enhanced version of that reality. **MR (mixed reality)** is essentially a combination of both. You can see and remain in the "real world," yet you are also seeing virtual objects. **Microsoft's HoloLens** allows its users to do just that. Imagine you and your colleagues can collaborate together in a shared physical space, while also viewing the same VR hologram. That is precisely what **PACCAR's** engineering and sales teams are doing. By using HoloLens' MR technology during the design process for new engines, engineers save time and resources – allowing for faster, real-time collaboration and innovation. At the same time, PACCAR's sales teams are using the technology to elevate the sales experience for their customers - making the process both more fun and interactive. To ensure seamless integration of HoloLens into PACCAR's workflow, Microsoft has a PACCAR-dedicated HoloLens team supporting the implementation and operation of this new, **homegrown technology**.

POWER
School rivalry is alive and well - but in the case with **Western Washington University (WWU)** and the **University of Washington (UW)**, competition is set aside and **solar innovation** is created. In summer 2017, New Mexico-based UbiQD reached an agreement with WWU and UW to exclusively license luminescent solar concentrator (LSC) technology that was developed at WWU's Advanced Materials Science and Engineering Center with UW's CoMotion via funding from the National Science Foundation. The technology was created by these two Washington universities, and will be commercialized by UbiQD. While this particular technology is now licensed, the universities are still researching new approaches for converting sunlight into hydrocarbon fuels. This **homegrown tech** is just one result of collaboration and partnership between Washington's universities - and demonstrates the job opportunities that come with innovation.